The EDRN Knowledge Environment

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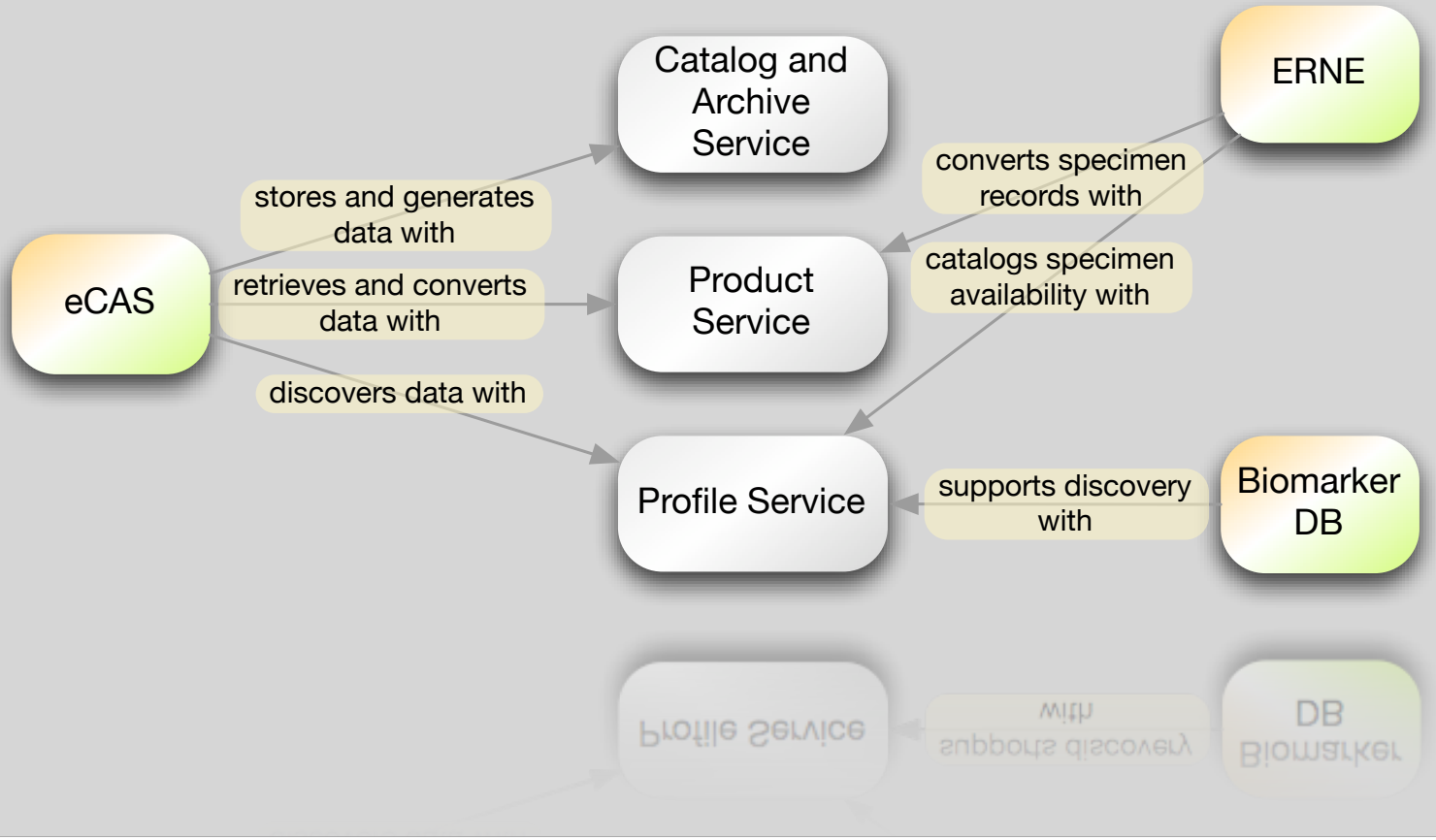
Many Systems

Many commonalities?

Applications for Cancer Research

- Informatics are vital to the progress of cancer research
- EDRN has developed standalone informatics applications
    - Site information, study management tools, protocol data, etc.
- JPL developed an *architecture* for informatics
    - Including applications that are *interoperable*
        - ERNE, eCAS, Biomarker Database, and so forth



Common Components

the architecture

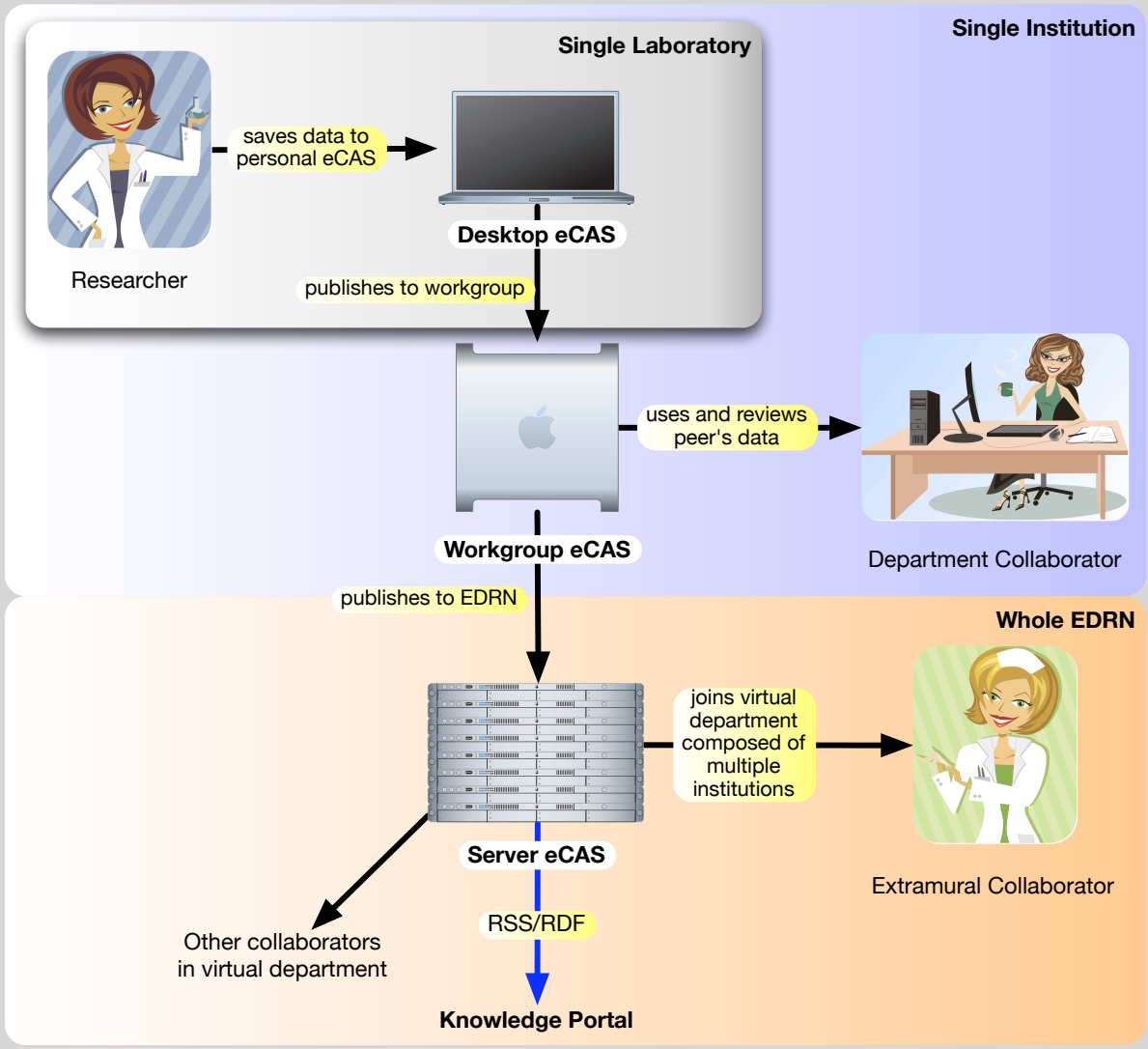
Keys to Interoperability

- Applications must speak a common *metadata language*
  - When you say “37.9”, I need to know what you mean
    - Millimeters of invasiveness, milliliters of blood, body temperature in degrees centigrade, percentage of blast cells in a tissue block, etc.
- When data *share* some set of metadata elements, they may be *correlated*
  - Automatic correlation and correlative searches lead to
    - *Accelerated discovery*

The Semantic Web

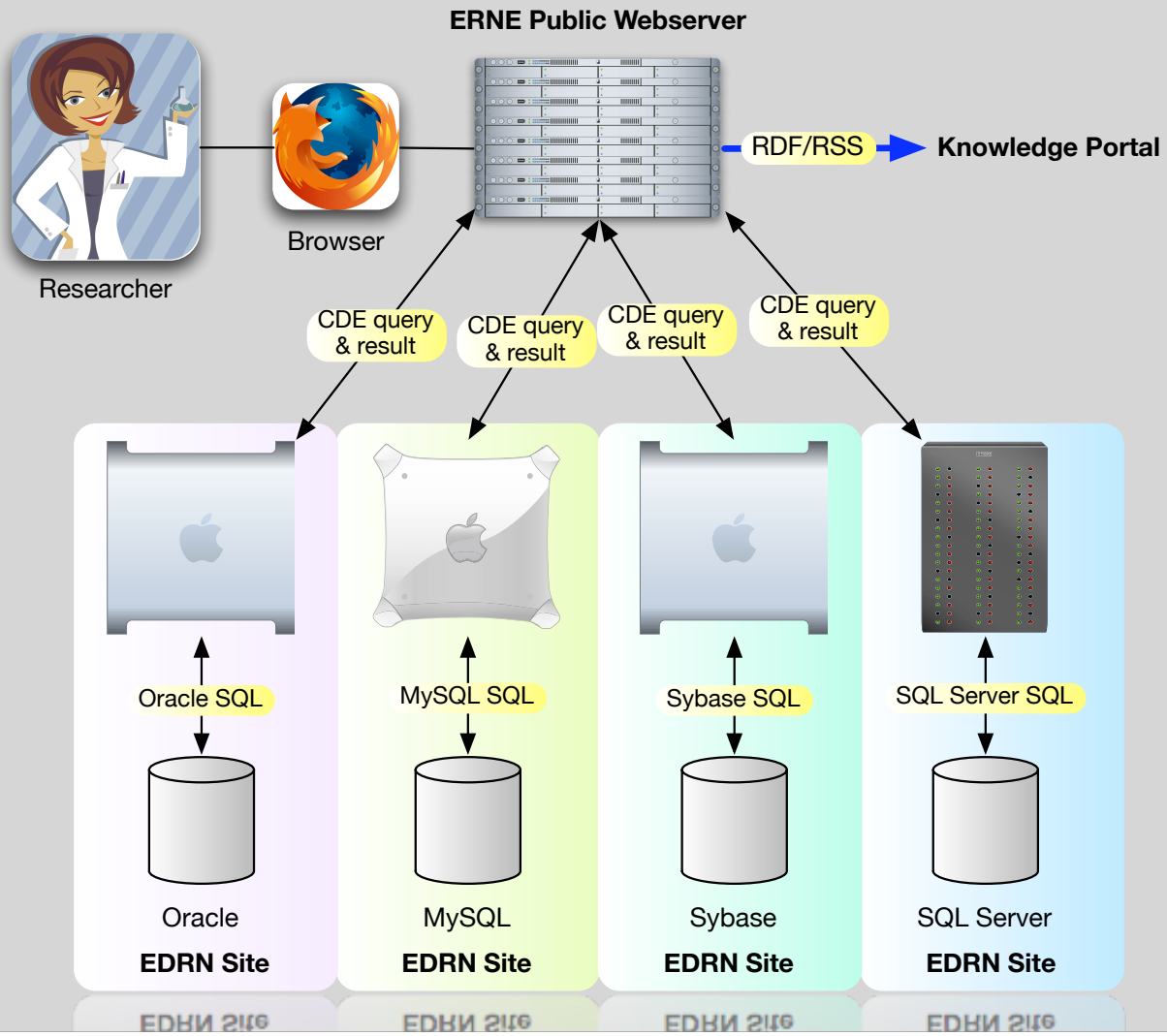
- Attach a URI to any kind of metadata term
    - “cell count” is described at http://some.host/rdfs/schema#cellcount
- Then use the Resource Description Format to describe EDRN entities
    - RDF identifies resources with URIs
    - And describes them with statements
- Specimen at http://some.host/specimens/1192812 has a “cell count” (http://some.host/rdfs/schema#cellcount) of 396

Publish each application's entities in RDF!



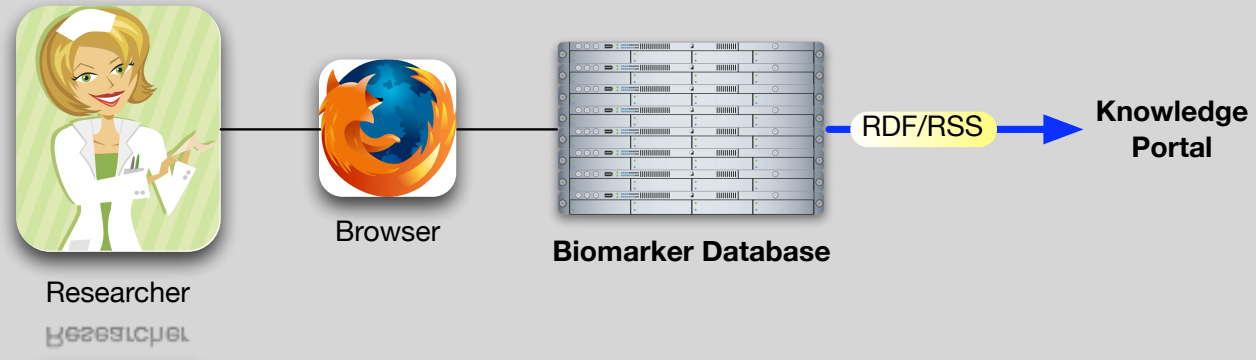
Sending eCAS data

to a single knowledge portal



Sending specimen data

to a single knowledge portal



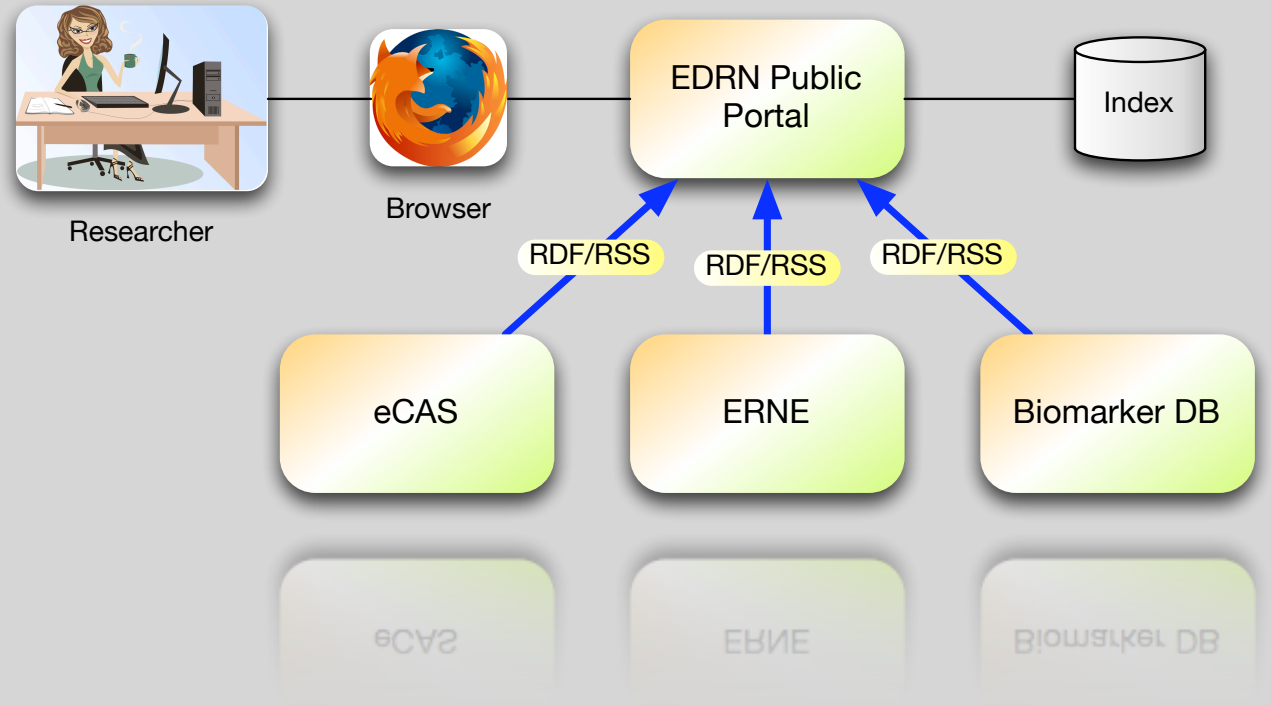
Sending biomarkers

to a single knowledge portal

Ramifications?

- eCAS sites may choose to, or not to, and even *which* data to publish
- ERNE publishes its entire virtual specimen bank
- Biomarker database publishes all biomarkers
- Future applications need only describe entities with RDF
    - And so long as RDFS is available
        - Search forms and help text may be displayed

All available on the EDRN public portal

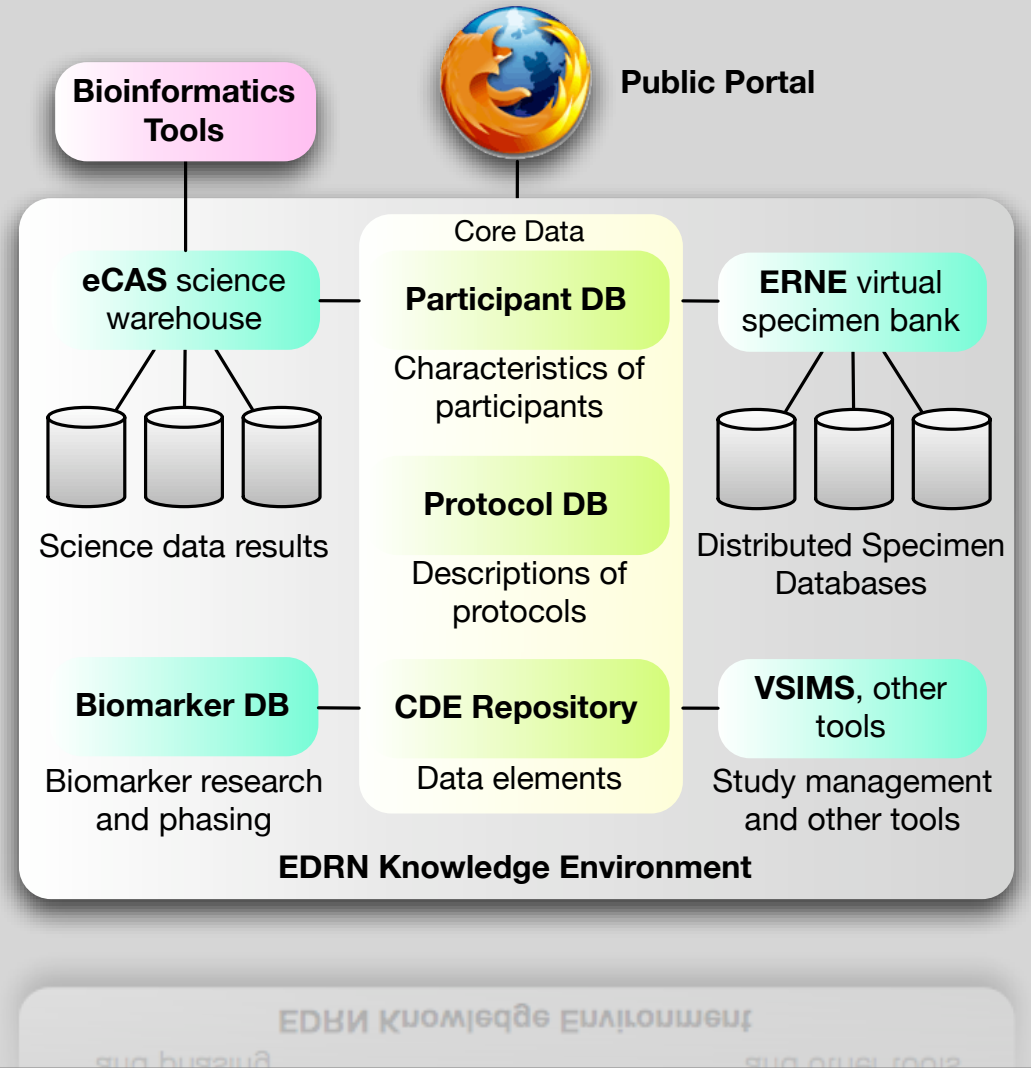


One stop shopping

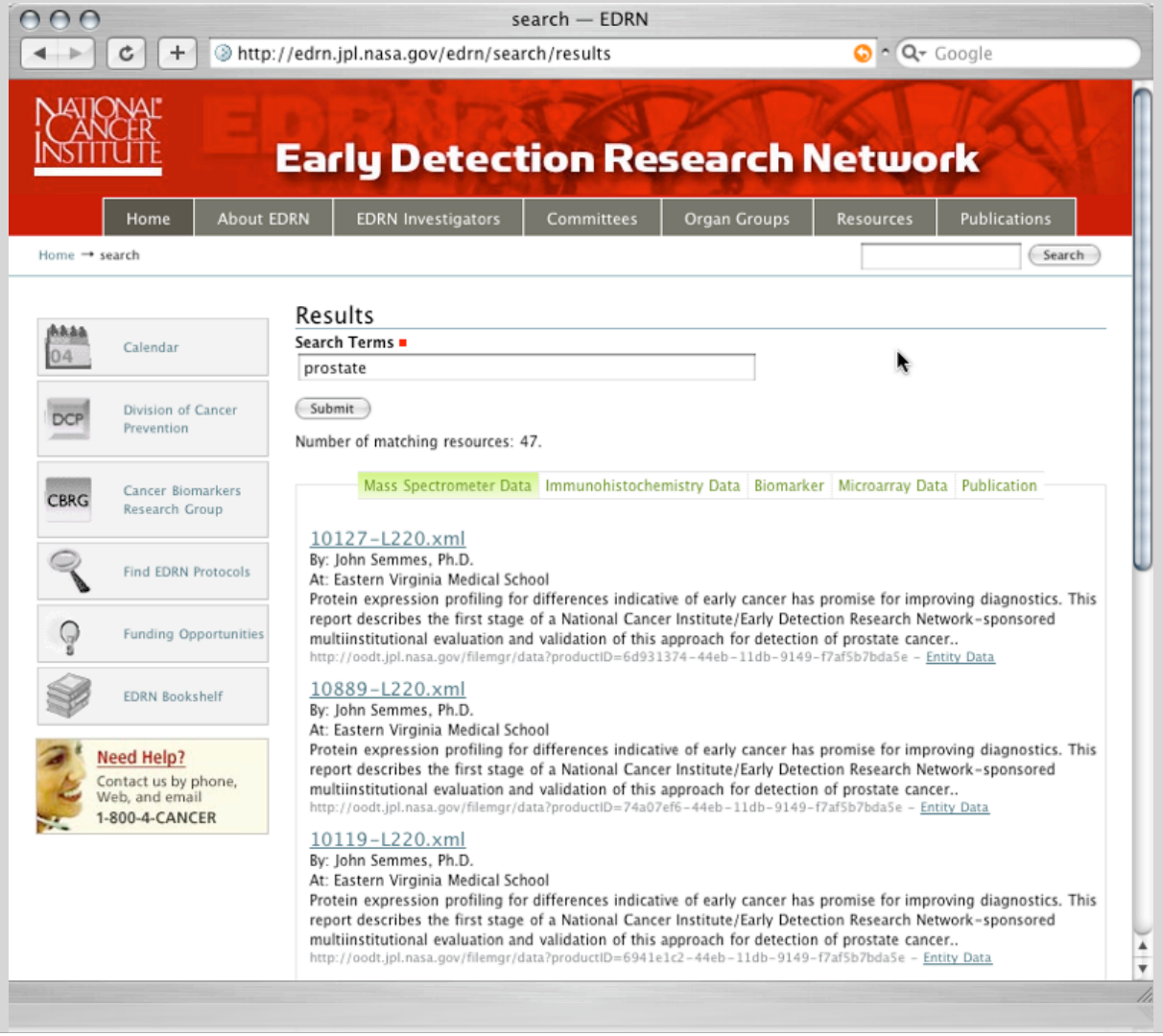
for cancer research data

One-Stop Application Development

- Not just with a browser
- Web services interfaces from portal
  - XML-RPC, REST, and (in future) SOAP
  - Develop new cancer research tools



Prototype | architecture



Prototype

screen shot

Conclusions

- Faster correlations and discoveries
    - Potential for *automated discovery*
- Unification of disparate applications
    - Made possible through *common vocabularies* and RDF
- Way cool idea